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# CLAIMS:

1. An isolated nucleic acid molecule comprising a sequence of nucleotides encoding or complementary to a sequence encoding a flavonoid 3', 5' hydroxylase (F3'5'H) wherein the nucleotide sequence encodes an amino acid sequence selected from the list consisting of SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:27 and SEQ ID NO:32 or an amino acid sequence having at least about 60% similarity to at least one of the amino acid sequences selected from the list consisting of SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:27 and SEQ ID NO:32 wherein expression of said nucleic acid molecule in a rose petal tissue results in detectable levels of *delphinidin* or *delphinidinbased molecules* as measured by a chromatographic technique.

2. The isolated nucleic acid molecule of Claim 1, comprising a nucleotide sequence selected from the list consisting of SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:26 and SEQ ID NO:31 or a nucleotide sequence having at least about 60% identity to at least one of the nucleotide sequences selected from the list consisting of SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:26 and SEQ ID NO:31, or a nucleotide sequence capable of hybridizing to at least one of the nucleotide sequences selected from the list consisting of SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:26 and SEQ ID NO:31 or a complementary form thereof under low stringency conditions

3. The isolated nucleic acid molecule of Claim 1 or 2 wherein the nucleic acid molecule is derived from a plant selected from *Viola* spp, *Salvia* spp, *Lavandula* spp and *Kennedia* spp.

4. The isolated nucleic acid molecule of Claim 2, wherein the nucleotide sequence comprises an overall percentage of less than or equal to 54% of the nucleotides (i) A, or (ii) T, or (iii) A and T in the third nucleotide position of each codon.

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5. A construct comprising a sequence of nucleotides comprising: (i) a promoter which is operable in rose petal tissue and wherein said promoter is operably linked to, (ii) a nucleic acid molecule according to any one of Claims 1 to 4.

6. The construct of Claim 5, wherein said promoter is selected from the group consisting of rose CHS, chrysanthemum CHS and CaMV 35S.

7. A construct of Claim 6 wherein said promoter comprises SEQ ID NO:5 or SEQ ID NO: 30, or a functional equivalent thereof.

8. A method for producing a genetically modified plant capable of synthesizing a F3'5'H, said method comprising stably transforming a cell of a suitable plant with a nucleic acid sequence as defined in any one of Claims 1 to 4, under conditions permitting the eventual expression of said nucleic acid sequence, regenerating the genetically modified plant from the cell and growing said genetically modified plant for a time and under conditions sufficient to permit the expression of the nucleic acid sequence.

9. A method for producing a genetically modified plant with reduced indigenous or existing F3'5'H activity, said method comprising stably transforming a cell of a suitable plant with a nucleic acid molecule as defined in any one of Claims 1 to 4, regenerating a transgenic plant from the cell and where necessary growing said genetically modified plant under conditions sufficient to permit the expression of the nucleic acid.

10. A method for producing a genetically modified flowering plant exhibiting altered inflorescence properties, said method comprising stably transforming a cell of a suitable plant with a nucleic acid sequence as defined in any one of Claims 1 to 4, regenerating a genetically modified plant from the cell and growing said genetically modified plant for a time and under conditions sufficient to permit the expression of the nucleic acid sequence.

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11. A genetically modified plant or part thereof or cells therefrom comprising an isolated nucleic acid molecule of any one of Claims 1 to 4.

12. A genetically modified plant or part thereof or cells therefrom comprising an isolated nucleic acid molecule of any one of Claims 1 to 4 or comprising an altered level of expression of a nucleic acid molecule of any one of Claims 1 to 4.

13. The genetically modified plant or part thereof or cells therefrom of any one of Claims 11 to 12, wherein the plant part is selected from the group comprising sepal, bract, petiole, peduncle, ovaries, anthers, flowers, fruits, nuts, roots, stems, leaves; and seeds.

14. The genetically modified plant or part thereof or cells therefrom of Claims 11 to 12, wherein the plant is selected from the group comprising rose, carnation, lisianthus, petunia, lily, pansy, gerbera, chrysanthemum, geranium, *Torenia*, *Begonia*, *Cyclamen*, *Nierembergia*, *Catharanthus*, *Pelargonium*, orchid, grape, apple, *Euphorbia* and *Fuchsia*.

15. The genetically modified plant or part thereof or cells therefrom of Claims 11 to 12, wherein the plant is a rose.

16. Use of an isolated nucleic acid molecule as defined in any one of Claims 1 to 4, in the manufacture of a genetic construct capable of expressing F3'5'H or down-regulating an indigenous F3'5'H in a plant, or altering the level of an indigenous F3'5'H enzyme in a plant.

17. A gene silencing construct comprising an isolated nucleic acid molecule as defined in any one of Claims 1 to 4 or a complex thereof.

18. An extract from a genetically modified plant or part thereof or cells therefrom from any one of Claims 11 to 14.

19. The extract of Claim 18, wherein the extract is a flavouring or food additive or health product or beverage or juice or colouring or dye or paint or tint.

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20. A eukaryotic organism carrying a genetic sequence encoding a F3'5'H molecule according to any one of Claims 1 to 4 extrachromasomally in plasmid form.
21. The use of a nucleic acid molecule of any one of Claims 1 to 4 in the manufacture of a genetically modified plant or part thereof or cells therefrom.
22. The genetically modified plant or part thereof or cells therefrom of Claim 21, wherein the genetically modified plant or part thereof or cells therefrom exhibits altered flowers or inflorescence.
23. An isolated nucleic acid molecule comprising SEQ ID NO:5 or a functional equivalent thereof.
24. An isolated nucleic acid molecule comprising SEQ ID NO:30 or a functional equivalent thereof.
25. Use of a nucleic acid molecule of any one of Claims 1 to 4 in the identification of genetic material encoding a F3'5'H.
26. Use of a nucleic acid molecule of any one of Claims 1 to 4 in the amplification and cloning of genetic material encoding a F3'5'H.
27. An isolated F3'5'H encoded by the nucleotide sequence of any one of claims 1 to 4.